

## ABSTRACT

5 This invention discloses immunopotentiating agents  
which stimulate an immune response. These agents are  
categorized into single agents that act directly, adjuvants  
added concurrently with the agents, or heteroconjugates.  
Heteroconjugate agents elicit or enhance a cellular or  
humoral immune response which may be specific for an epitope  
contained within an amino acid sequence. Enhanced  
10 hematopoieses by bone marrow stem cell recruitment was also  
a result of administering some of these agents.

15 Examples of immunopotentiating agents include  
monoclonal antibodies and proteins derived from  
microorganisms (e.g., enterotoxins) which activate T cells.  
One method of treatment disclosed uses only the  
immunopotentiating agent to stimulate the immune system.  
Another uses adjuvants in combination with the agent. A  
third method employs heteroconjugates.

20 Heteroconjugates comprise: (a) an immunopotentiating  
protein which is characterized as having an ability to  
stimulate T cells; and (b) a second protein having an amino  
acid sequence which includes an epitope against which a  
cellular or humoral response is desired. This invention  
25 also relates to a method of preparing the heteroconjugate,  
and to a method of stimulating the immune system in vivo in  
a novel way. One route of stimulation is to activate T  
cells, in some instances, specific subsets of T cells, by  
administering heteroconjugates containing an  
30 immunopotentiating protein and a second protein, to mammals.  
For this method of treatment, the second protein in the  
heteroconjugate is derived from abnormal or diseased tissue,  
or from an infectious agent; alternatively, the second  
35 protein is produced synthetically by standard methods of

molecular biology. Sources of the second protein include tumors, viruses, bacteria, fungi, protozoal or metozoal parasites.

5            Monoclonal antibodies or T cells prepared from mammals whose immune systems have responded to administration of the heteroconjugate may be produced and administered to induce passive immunity. A method of preparing a hybridoma which secretes said monoclonal antibodies and use of these  
10           monoclonal antibodies and T cells, are also disclosed. This invention is also directed to a vaccine comprising the heteroconjugate.

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